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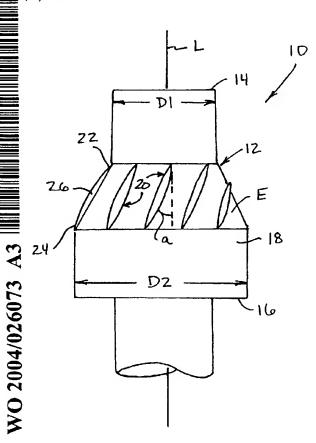
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(54) Title: ROTATING MANDREL FOR EXPANDABLE TUBULAR CASING



(57) Abstract: An expansion mandrel (10) for expanding tubular casing includes a tapered expansion portion having expansion segments (20) which are angularly disposed on an external surface of the mandrel (10). The segments (20) reduce friction and cause the mandrel (10) to rotate in response to the mandrel (10) being moved through the casing during expansion of the casing.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/25715

CLASSIFICATION OF SUBJECT MATTER : E21B 23/00 IPC(7) US CL : 166/207,384 According to International Patent Classification (IPC) or to both national classification and IPC FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) U.S.: 166/207,384,206,380 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) DOCUMENTS CONSIDERED TO BE RELEVANT Category * Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. Х US 6,325,148 A (Trahan et al.) 4 December 2001 (04.12.2001), Fig. 9 and col. 6, lines 1-3.4.9, 13-15, 17, 20 X,P US 6,457,532 A (Simpson) 1 October 2002 (01.10.2002), Figs. 20, 22 24, and col. 12, 1-7,13-17,19 line 27- col. 14, line 9. Y,P 8,10-12,18,21-22 Х US 1,597,212 A (Spengler) 24 August 1926, (24.08.1926), Entire document, particularly 1-5,13-16 Figure 1. Y 8.18 Y.P US Patent Application Publication 2003/0075338 (Sivley), 24 April 2003 (24.04.2003), 10-12,21,22 Fig. 10 and paragraph 0118 on pages 9-10. Х US 3,039,530 A (Condra) 19 June 1962 (19.06.1962), Fig. 1, col. 1, lines 7-12. 1-3,6,9 Purther documents are listed in the continuation of Box C. See patent family annex. Special categories of cited documents: later document published after the international filing date or priority date and not in conflict with the application but cited to document defining the general state of the art which is not considered to be of particular relevance. "A" understand the principle or theory underlying the invention document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive -Eearlier application or patent published on or after the international filing step when the document is taken alone ·L· document which may throw doubts on priority claim(s) or which is cited "Y" document of particular relevance; the claimed invention cannot be to establish the publication date of another citation or other special reason considered to involve an inventive step when the document is combined with one or more other such documents, such (as specified) combination being obvious to a person skilled in the art document referring to an oral disclosure, use, exhibition or other means -&document member of the same patent family document published prior to the international filing date but later than the Date of the actual completion of the international search Date of mailing of the international search report 09 APR 2004 04 March 2004 (04.03.2004) Name and mailing address of the ISA/US Applorized officer Mail Stop PCT, Attn: ISA/US Commissioner for Putents P.O. Box 1450 Telephone No. 703-308-1113 Alexandria, Virginia 22313-1450 Facsimile No. (703)305-3230

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